

PNRI Newsletter

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In this Issue

Third Philippine Nuclear Congress	1
- Scientific Sessions	4
- Nuclear Youth Summit	5
- 2015 PNSQ	5
IAEA Director General at 3rd PNC	2
IAEA Officials Visit PNRI	6
Plant Growth Promoters.....	7
IAEA Teachers Exchange Program	7
Uranium Potential in Asia-Pacific	8
EU Expert Mission on Regulations	9
3rd CMR and 2nd CRT	10
FTC on Reactor Engineering.....	10
PNRI at the APEC Summit	11
MDS Turnover by USDOE	11
PNRI Hosts AmCham and OSAC	12

The PNRI Newsletter is an online publication of the Philippine Nuclear Research Institute (PNRI), a research and development institute of the Department of Science and Technology (DOST).

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PHILIPPINES HOLDS THE THIRD PHILIPPINE NUCLEAR CONGRESS

International Atomic Energy Agency (IAEA) Director General Yukiya Amano (center) with Department of Science and Technology (DOST) Secretary Mario Montejo (left) and PNRI Director Dr. Alumanda Dela Rosa (right) during the opening ceremonies of the 3rd Philippine Nuclear Congress at the Diamond Hotel in Manila.



The 3rd PNC Technical Sessions at the ballroom of the Diamond Hotel in Manila

Continuing the stride for advancing nuclear applications for national development, the Philippines has recently held the Third Philippine Nuclear Congress (PNC) from December 7 to 9, 2015 at the Diamond Hotel in Manila.

With the theme, "Meeting Challenges through Nuclear Science and Technology for Sustainable Growth," around 500 representatives and experts from the agricultural, industrial, medical, government and academic sectors, including key officials from international organizations attended the Third PNC as they assessed the current state and contributions of nuclear technology in the Philippines and reviewed the steps to be taken to harness these technologies for inclusive and sustainable growth.

Continued on Page 3



From the Director



Greetings to everyone!

As 2015 draws to a close, we at PNRI were met with a very eventful fourth quarter, and it is my pleasure to report that the Institute has once again capped the year with accomplishments.

First and foremost, our year-long preparations for the Third Philippine Nuclear Congress (3rd PNC) proved to be well worth the effort. Held from December 7-9, the 3rd PNC was graced by no less than the presence of International Atomic Energy Agency Director General Yukiya Amano, as well as the representatives from various sectors who discussed on the current issues on nuclear science and technology and its peaceful applications. I would once again congratulate PNRI and our partner agencies for a job well done with the success of this historic event.

PNRI has also continued to do its part in conducting nuclear research and development and preserving nuclear safety and security.

Our Plant Growth Promoter was officially launched in November, and our farmers may soon expect better harvests with improved crop yields.

PNRI participated in securing the Asia-Pacific Economic Cooperation (APEC) Economic Leaders Meeting on November 18-19 through its expertise in the detection of nuclear and radiological materials.

The Institute also conducted workshops and exchange programs in cooperation with the IAEA, the European Union and the Asian Nuclear Safety Network, which are expected to improve the capabilities of PNRI and its partner agencies.

We hope that we can meet 2016 with even more achievements for our country.

IAEA Director General Amano at the 3rd PNC



Top Photo: IAEA Director General Yukiya Amano addresses the 3rd Philippine Nuclear Congress during its opening ceremonies on December 7 at the Diamond Hotel in Manila

Bottom Photo: (From Left) DOST Secretary Mario Montejo, PNRI Director Dr. Alumanda Dela Rosa and Director General Amano officially open the scientific exhibits of the 3rd Philippine Nuclear Congress

Crowning the beginning of the Third Philippine Nuclear Congress this December 7, International Atomic Energy Agency (IAEA) Director General Yukiya Amano returned to the Philippines as the guest of honor at the opening of the historic multi-sectoral forum.

The Director General, who was met last January with a warm welcome and an impressive roster of nuclear facilities and laboratories during his previous visit to the Philippines, said during his keynote address that "it somehow seems appropriate that [his] last trip of the year should also be to Manila."

He acknowledged the role of Filipino experts in the agency's Technical Cooperation Programme, which is the primary avenue with which the IAEA brings nuclear technology to its Member States.

The Philippines has been a Member State of the IAEA since 1958, and has since been contributing to the United Nations agency through its expertise in nuclear research and development as well as regulatory functions.

Continued on Page 4

The Philippines Holds 3rd PNC - Continued from Page 1

The 3rd PNC was organized by the DOST and PNRI along with several partner agencies and scientific societies.

The first and second Congresses were held twenty years apart, in 1976 and in 1996, respectively.

"Indeed, the Philippines has come a long way in harnessing nuclear science and technology for country development," said DOST Secretary Mario Montejo in his inspirational message during the opening ceremonies on December 7.

"Though still not adequately known, the country has posted significant strides in harnessing the power of the atom in the fields of agriculture, health, industry and the environment, as well as in fostering nuclear safety, safeguards and security"

The Secretary mentioned several of these technologies developed in no small part through the efforts of PNRI and cooperating research agencies, such as the plant growth promoter developed from radiation-processed seaweed extracts, and precision farming methods using stable isotopes.

The Director General applauded the continuing contribution of Filipino scientists, researchers and regulators in the IAEA's various projects under the aim of Atoms for Peace and Development.

Technical sessions and scientific exhibits were held, where scientists, doctors, regulators, industrialists and government officials discussed the latest nuclear and radiation technologies as well as the current issues that may be solved.

Another highlight of the 3rd PNC is the launching of the First Philippine Nuclear Youth Summit on the first day.

Hundreds of students, high school and college, as well as teachers, professors and young professionals were inspired by the experiences in the nuclear field as shared by Director General Amano himself along with other scientists and professionals.

This was followed by the National Level of the 2015 Philippine Nuclear Science Quiz.

The top secondary schools from across the DOST Regional Clusters competed in a contest of knowledge on nuclear science and technology (see article on Page 5).

A healthy combination of international prestige, full inter-agency support, the presence and potential of the youth sector, and maximum participation by the audience made the 3rd PNC truly commendable, according to PNRI Director Dr. Alumanda Dela Rosa, who served as Co-Chairperson for the 3rd PNC.



Special presentations by the National Power Chorale of the National Power Corporation (above) and the folk dance troop of San Francisco High School (below) entertained the distinguished guests



Left: PNRI Director Dela Rosa congratulates everyone for the successful 3rd PNC

Right: (from left) PNRI Director Delar Rosa, DOST Secretary Montejo, and IAEA Director General Amano views some of the 3rd PNC scientific exhibits at the Diamond Hotel in Manila

During the closing ceremonies in the afternoon of December 9, Dr. Dela Rosa thanked the participants and honored guests, and especially the men and women of PNRI for working hard in making the historic event possible.

She also expressed her gratitude to the DOST, the IAEA and other partner agencies for their full support before and during the Congress.

Director Dela Rosa said that the resounding success of the three-day Congress will certainly prove to be a lesson and inspiration for future Congresses to come, which will hopefully be sooner and more frequent than the past ones.

"I hope it will not take us another twenty years to hold the Fourth Philippine Nuclear Congress," she said.

Local and International Experts at 3rd PNC Technical Sessions and Exhibits

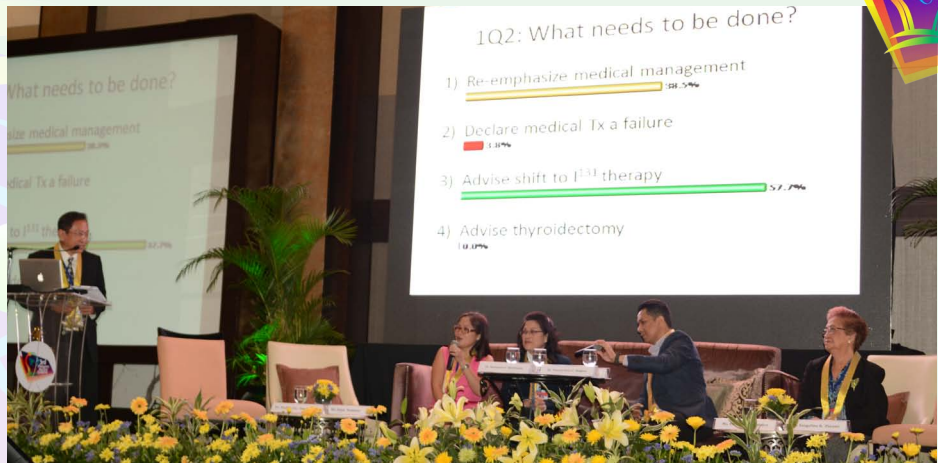
From December 7 to 9, scientists, government officials, and regulators presented the latest advances and current issues regarding their respective sectors and the corresponding nuclear technologies that are proving their worth in surmounting these challenges.

Day one covered the Technical Session for Food and Agriculture, where the Joint IAEA /Food and Agriculture Organization Division strongly advocated the use of nuclear applications for food security and sustainable agricultural development.

Experts from PNRI, the Philippine Center for Postharvest Development and Mechanization - Department of Agriculture and the United States Department of Agriculture (USDA) discussed on the benefits and economic feasibility of food irradiation, mutation breeding and precision farming methods through stable isotopes.

During the Technical Session for Industry in the morning of December 8, representatives from the IAEA and the Department of Energy shared to the participants the current status of nuclear energy in the global energy scheme, as well as the future place of nuclear power in the Philippines' energy mix. Local and international scientists also presented the applications of radiation processing to improve the quality of various products, as well as nondestructive testing of industrial materials and structures.

In the afternoon, the Technical Session for Health and Medicine featured a panel of experts and regulators involved in nuclear medicine deliberating on the applications of radioiodine in hyperthyroidism and thyroid cancer. The session also featured an interactive "clicker" for the audience, which allowed them to participate on-the-spot in each of the polls on nuclear medical issues raised by the facilitators and panelists.



Top: Dr. Teofilo San Luis of the Philippine Society for Nuclear Medicine facilitates an interactive poll during the Technical Session for Health and Medicine

Continued on Page 6

Bottom: A PNRI researcher explains one of their poster presentations during the scientific exhibits

IAEA Director General at the 3rd PNC - Continued from Page 2

"More than 300 Philippine nationals have served as international experts under our Technical Cooperation programme, sharing their knowledge and experience with other developing countries."

The Director General emphasized that the task of IAEA goes well beyond the nuclear weapons, as it continues to serve as a driving force in using nuclear science and technology in support of its Atoms for Peace and Development program.

He also commended the efforts of the Philippines, particularly the PNRI, for the development of nuclear and radiation applications that benefit not only the country, but also our fellow Member States in the Asia-Pacific Region and beyond.

"Our mandate is much broader than nuclear non-proliferation: it is to bring the benefits of nuclear science and technology to all humankind, while minimizing the risks."

As for nuclear power in the Philippines, the Director General reiterated that while the IAEA does not intervene in a country's decision to engage in a nuclear power program, the agency is always ready to assist countries that decide to use nuclear energy in a safe, secure and sustainable manner.



He highlighted the "striking overlap" between the various nuclear applications fostered by the IAEA and the United Nations' 17 Sustainable Development Goals, which aim to mitigate, if not solve, the issues of poverty, hunger, health, clean water, industry, energy and climate change.

Director General Amano was also present at the opening of the 1st Philippine Nuclear Youth Summit, where he advised the crowds of students and teachers that "nuclear science and technology is a very cool field to be in."

"You will find it personally very rewarding and you will have an opportunity to contribute to the well-being and prosperity of your own country, and of the whole world."



Clockwise from top left: Director General Amano at the First Philippine Nuclear Youth Summit; DG Amano with Secretary Montejo; Members of the media listen to the Director General's statement

Students Energize the 1st Philippine Nuclear Youth Summit



Left Photo: At the 1st Philippine Nuclear Youth Summit (PNYS), World Nuclear Olympiad 2nd Placer Mr. Anton Philippe Tanquintic (on podium) shares his experiences as an international contestant. Behind him at the speakers' table (from right) are IAEA Director General Yukiya Amano, PNRI Director Dr. Alumanda Dela Rosa, Engr. James Porter Jr. and Dr. Teofilo San Luis Jr. of PSNM.

Right Photos: Student members of the Powerful Opportunities for Women Eager and Ready for Science, Engineering and Technology (POWERSET) from San Francisco High School (top) and Quezon City Science High School (bottom) perform a special number for the speakers of the 1st PNYS.

About 200 students, teachers and young professionals throughout the Philippines attended the First Philippine Nuclear Youth Summit, which was held on December 7 at the Diamond Hotel in Manila.

Aside from Director General Amano, several PNRI scientists, engineers, and medical specialists shared their experiences as long-time professionals in the nuclear field, including IAEA Technical Cooperation Division for Asia and the Pacific Director Dr. Najat Mokhtar and PNRI Director Dr. Alumanda Dela Rosa.

The youngest among the speakers was Mr. Anton Philippe Tanquintic, a fresh graduate from Ateneo De Manila University who won second place at the World Nuclear Olympiad during the IAEA 59th General Conference in Vienna, Austria.



"We know so much more now because we are standing on the shoulders of giants," said Tanquintic.

The Summit participants also joined in several competitions and group dynamics such as the on-the-spot essay writing contest and the cheering competition (see photos above).

Also among the participants were female students from Quezon City Science High



School and San Francisco High School who are members of Powerful Opportunities for Women Eager and Ready for Science, Engineering and Technology (POWERSET). The group was organized under an IAEA project for bringing the study of nuclear science and technology to secondary schools in the Asia-Pacific region.

The young ladies performed special numbers for Director General Amano and the other guests of honor.

PSHS Cordillera Aces 2015 Philippine Nuclear Science Quiz

The afternoon of December 8 saw an even more intense competition as high school students from 19 schools throughout the country gathered to participate in the National Level of the 2015 Philippine Nuclear Science Quiz.

The participating schools came from the top five contestants from each of the DOST Regional Clusters during the Elimination Round. After thirty grueling questions, the five highest scorers qualified for the power-up round in preparation for the final challenge.

The last round was a race to the finish line consisting of ten questions allowing the contestants to move forward one step when answered correctly but penalized them to move back if the answer was wrong. The top two teams in the power-up round earned the advantages of being able to move forward a further step than usual



The 2015 PNSQ finalists during the final round (left) and in the closing ceremonies of the 3rd PNC (right)

and/or being able to avoid the penalty when getting a wrong answer.

At the end of the final round, Philippine Science High School – Cordillera Administrative Region Campus clinched the First Prize with Php 50,000, followed by Manila Science High School, which won Second Prize with Php 30,000 and Davao City National High School, which won the



PNSQ 2015
Philippine Nuclear Science Quiz



Third Prize with Php 20,000. The two other finalists, Philippine Science High School – Central Visayas Campus and Sinait National High School each won a consolation prize of Php 15,000.

The formal awarding ceremony was done during the Congress' closing ceremonies on December 9.

Local and International Experts - Continued from Page 4

The third day began with the Technical Session for Environment, where scientists from PNRI, Australian Nuclear Science and Technology Organization (ANSTO) and the Global Institute for Water Security (GIWS) in Canada presented the results of their research on water and air pollutants using isotope analytical techniques, as well as the latest advances on environmental radiation monitoring in the Philippines.

The last session for the PNC was the Technical Session on Nuclear Safety, Security and Safeguards. Regulators from the United States Department of Energy and the European Commission shared the experience of respective countries on the performance of the regulatory body. For the local viewpoint, participants had the opportunity to learn the current status of our country's own regulatory body and its licensing procedures with presentations of PNRI regulators and licensees.

Congressman Francis Gerald Abaya was one of the speakers for the final session, where he shared to participants the current status of the House Bill 147 or the Comprehensive Nuclear Law, with the other challenges to the formation of an independent nuclear regulatory body that will make the Philippines in line with international standards. Congressman Abaya is the primary sponsor of the bill in the House of Representatives.

At the open forum, many participants asked questions to the session speakers, and some even made vital suggestions pushing for better coordination among members of their sectors.

The comments were well accepted by the officials present and the general audience. During breaks and after sessions, the participants also took the chance to view 33 poster presentations by several scientists and researchers from PNRI and other agencies. As with the ses-



Left: Dr. Preciosa Corazon Pabroa of the PNRI Nuclear Analytical Techniques Applications Section (on podium) presents their study on air pollution at the Technical Session for Environment.
Right: Ms. Charito Aranilla of the PNRI Chemistry Research Section (2nd from left) receives the first prize for the competition for scientific poster presentations during the 3rd PNC Closing Ceremonies.



sions, the poster papers demonstrated the latest research advances in nuclear and nuclear-related fields as applied in various sectors.

The highest rated poster presentations were awarded during the last day of the Congress. The poster that won first place was the entry entitled "Fabrication of Nerve Guidance Conduit with Luminal Filler as Scaffold for Peripheral Nerve Repair" authored by Ms. Charito Aranilla of the PNRI Chemistry Research Section along with Mr. Rodoslaw Wach and Mr. Piotr Ulanski of the Lodz University of Technology.

The second place was bagged by Ms. Adelaida Barrida, Ms. Ana Marie Veluz, Ms. Mary Jayne Manrique, Mr. Arvin Dimaano and Mr. Eduardo Costimiano of the PNRI Agricultural Research Section for the entry entitled "Enhancing Productivity of Adlai (Coix lacryma-jobi L.) by Gamma Irradiation". The third prize was awarded to Ms. Adelina Bulos, Ms. Teresa Borrás, Mr. Rommel Mascariñas and Ms. Ivy Angelica Nuñez of the PNRI Isotope Techniques Section, Mr. Gregory Ciocon of the PNRI Business Development Section and Dr. Alumanda Dela Rosa for the entry entitled "PNRI Pioneering the Establishment and Operation of the Technetium - 99m Generator Production Facility for Nuclear Medicine Applications".



Exhibits by sponsors and partner corporations supplying R&D equipment and servicers

A special prize for the Most Liked Poster was awarded to the poster presentation entitled "Assessment of Cadmium (II) and Chromium (VI) Removal from Aqueous Solution Using Coconut "Cocosnucifera" Coir as Biosorbent in Batch and Fixed - bed Column Adsorption" by Mr. Raymond Suggang of the PNRI Nuclear Analytical Techniques Applications Section along with Mr. Mark Lorenz Capili, Jhealuz Escover, John Andre San Miguel and Ayesha Duavis of the University of Santo Tomas.

The 3rd PNC participants also visited the exhibits by sponsors and other partner companies offering R & D-related products and services.

IAEA Officials Visit PNRI



Left: Dr. Najat Mokhtar (left), Director of the International Atomic Energy Agency (IAEA) Technical Cooperation - Division for Asia and the Pacific, visited PNRI for a meeting with Director Dr. Alumanda Dela Rosa (right).
Right: Dr. Mokhtar (center) with Dr. Dela Rosa (4th from right) and Mr. Patrick Dominique Brisset (3rd from right) of the IAEA Department of Nuclear Sciences and Applications with the PNRI Senior Staff and the operators of the PNRI Technetium-99m Generator Facility.



PNRI Plant Growth Promoters Increase Rice Yield Up to 60%

PNRI News

Filipino farmers will soon be looking forward to a great harvest as a radiation-modified plant growth promoter (PGP) can increase rice production to more than half the normal yield and protect them from infestation. This breakthrough in Filipino agriculture was developed by scientists from the Department of Science and Technology – Philippine Nuclear Research Institute (DOST-PNRI) with the National Crop Protection Center of the University of the Philippines – Los Baños (UPLB) and the Philippine Rice Research Institute (PHILRICE).

The scientists formulated the PGP from radiation-processed natural polymers such as carrageenan, which is extracted from seaweed and processed into powder. Radiation-induced degradation of these polymers is used to develop natural bioactive agents. When degraded by radiation, polysaccharides yield oligosaccharides, or polymers with shorter chains. These oligosaccharides had been shown to have elicitor and plant-growth promoting properties.

For the past three years, the PGP was being tested on rice farms in Nueva Ecija, Laguna and Bulacan. Results showed that with just around 3.2 liters per hectare of water mixed with the right proportion of PGPs, the crop yield of rice can be increased to around 60% compared to rice grown with normal farming practices.



Top Left: Senator Cynthia Villar (1st row, center), DOST Secretary Mario Montejo (1st row, 3rd from right), PNRI Director Dr. Alumanda Dela Rosa (2nd row, 3rd from left) and Dr. Lucille Abad of PNRI (1st row, 2nd from right) during the launching of the Plant Growth Promoters at the Farmer's Field Day in Pulilan, Bulacan.



Top Right: The Plant Growth Promoters made from radiation-processed carrageenan

Below: At the experimental ricefields in University of the Philippines Los Baños, the field with PGPs (blue arrow) is healthier and more protected from rice tungro bacilliform virus infestation than the control field (yellow arrow)



The field tests also demonstrated the improved resistance of rice applied with PGP against the rice tungro bacilliform virus infestation as well as bacterial leaf blight.

Farmers can maximize the potential yield of their crops when using PGPs in conjunction with more efficient farming methods and proper timing. The PGPs are applied to the crops during three stages, the first during its early vegetative stage 12-14 days after transplanting, followed

by a second application 16 to 22 days after the first stage (30-35 days after transplant). The final batch of PGPs is best applied just before the flowering stage, 45-50 days after transplanting.

The PGP for rice crops were officially launched on November 12 during the Farmer's Field Day in Pulilan, Bulacan, with Senator Cynthia Villar and DOST Secretary Mario Montejo in attendance.

IAEA Teachers Exchange Program with Malaysian Visitors



Left Photo: Malaysian teachers Mr. Arbain Baharudin, Ms. Lanita Md. Yusof, Ms. Nariah Endut and Ms. Rosnee Binti Daud (1st, 3rd, 4th and 8th from left, respectively) with representatives from the Department of Education - Division of City Schools Quezon City and PNRI program coordinators at the PNRI Radioisotopes Laboratory

Center Photo: A high school teacher supervises the participating students as they use radiation survey meters in a classroom experiment

Right Photo: Participating teachers in Quezon City during the closing of the Seminar on Nuclear Science and Technology for Science Teachers

The DOST-PNRI and the Department of Education –Division of City Schools Quezon City (DepEd-QC) hosted the visit of four science teachers from Malaysia for a teacher's exchange program under the International Atomic Energy Agency (IAEA) from November 24-28.

The exchange program serves as a follow-up to the previous visit of several Indonesian teachers to the Philippines to observe the integration of lessons on

nuclear science and technology in high school classrooms.

Both visits were under the IAEA project on Supporting Sustainability and Networking of National Nuclear Institutions in Asia and the Pacific Region, which aims to develop the youth's interest in nuclear science by reaching out to high schools throughout the region. The Malaysian teachers met with counterpart Filipino teachers from San Francisco High School (SFHS) and Quezon City Science High School (QCSHS),

who are currently serving as pilot schools for the outreach program. They were joined by Dr. Takeshi Iimoto from University of Tokyo. Dr. Iimoto, who was also involved in the previous visit, also donated several *Hakuru-kun* gamma radiation detectors for educational purposes.

The visiting teachers joined the pilot schools in a *Science on a Wednesday* where, among other games and science-

Continued on Page 8

Seminars, Workshops and Nuclear Training Courses

IAEA Hosting on Uranium Potential and Exploration in the Asia-Pacific Region

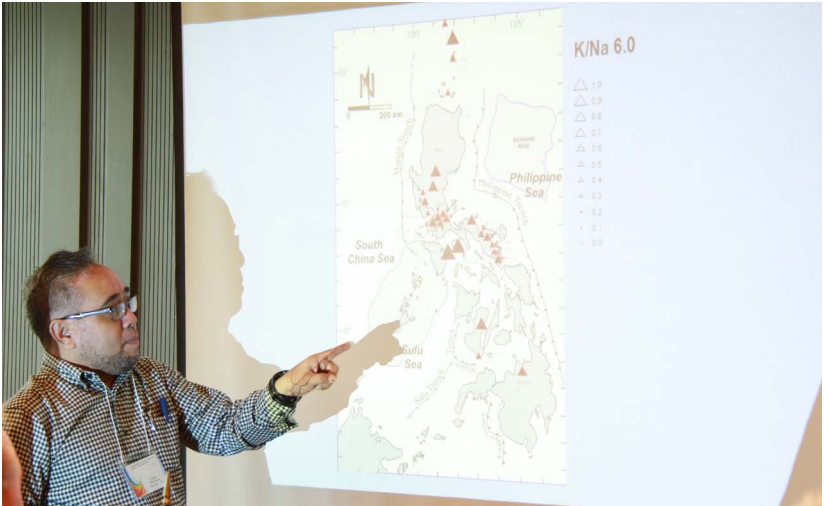
Tapping into the potential of Asia and the Pacific as a resource-rich region, the DOST-PNRI, in cooperation with the International Atomic Energy Agency (IAEA) hosted a training meeting for the exploration of uranium in the Asia-Pacific region from October 19 to 22 at the Novotel Manila Araneta Center in Quezon City.

Scientists, researchers, government officials and representatives from China, India, Indonesia, Nepal, Bangladesh, Thailand, Vietnam, Cambodia and the Lao People’s Democratic Republic attended the regional training meeting.

Continued on Page 9

Right: UP-NIGS Director Dr. Carlo Arcilla delivers a lecture on rare earth elements.

Bottom: The participants of the IAEA Training Meeting at the Novotel Manila Araneta Center in Quezon City.



IAEA Teachers Exchange Program - Continued from Page 7



Left Photo: Dr. Takeshi Iimoto of the University of Tokyo shares some strategies on teaching nuclear science and technology to high school students

Right Photo: PNRI Nuclear Information and Documentation Section Head Ms. Rhodora Leonin presents to the Malaysian teachers an interactive educational kiosk showing the presence of radiation in everyday materials

related activities, the students performed a classroom experiment on detecting radioactive sources using survey meters. Meanwhile, PNRI officially turned over its interactive kiosks on nuclear science and technology to the pilot schools.

The Malaysians were also treated to a visit to the Bataan Nuclear Power

Plant with PNRI and DepEd-QC officials. They were welcomed by the information staff of the National Power Corporation.

After these activities, the pilot schools each hosted the participants and experts to observe teaching demonstrations in a classroom setting involving nuclear, radiation and radioactivity concepts.



On the last day, secondary school science teachers from all over Quezon City attended the Seminar on Nuclear Science and Technology for Science Teachers.

Here, the participants were able to learn and apply teaching strategies to integrate nuclear science and technology to their classrooms.

EU Expert Mission on Regulatory Decision-Making and Licensing Procedures



Left Photo: European Union (EU) experts Mr. Sebastian Stransky and Mr. Jan Stuller (1st row, 2nd and 4th from left) with PNRI Director Dr. Alumanda Dela Rosa and Nuclear Regulatory Division Chief Mr. Teofilo Leonin (1st row, 3rd and 1st from left) join the PNRI regulators and staff for a group picture at the PNRI Compound



Right Photo: PNRI Licensing, Review and Evaluation Section Head Dr. Vangeline Parami (seated across in pink blouse) introduces the participants to the EU experts

To further develop the Philippines' regulatory functions, particularly the licensing capability of the DOST-PNRI as a regulatory body, experts from the European Union (EU) provided assistance to our regulators under the Project PH3.01/09: *Technical assistance for improving the legal framework for nuclear safety of strengthening the capabilities of the Regulatory Authority of the Philippines & its TSO.*

The EU experts are Mr. Sebastian Stransky from the Gesellschaft für Anlagen- und Reaktorsicherheit (GRS), a technical safety organization based in Germany, and Mr. Jan Stuller of the State

Office for Nuclear Safety (SUJB), the nuclear regulatory body of the Czech Republic.

The meeting began with an overview of Philippine laws and regulations on nuclear and radiation safety, as well as PNRI's mandate as the country's regulatory body for nuclear and radioactive materials and facilities.

This mandate began with the then-Philippine Atomic Energy Commission (PAEC) under the Science Act of 1958 (RA 2067), the Atomic Energy Regulatory and Liability act of 1968 (RA 5207) and later with Executive Order 128, which reorganized PAEC into the present PNRI.

The experts shared both the German and Czech legal and regulatory frameworks for nuclear safety, the licensing process and the quality management system. PNRI also shared its own licensing process as well as PNRI's implementation of its quality management system.

The meeting was able to facilitate an open exchange of knowledge and experience among experts, which helped improve the capabilities of the PNRI regulatory staff. The expert visit was part of the on-going partnership and technical cooperation between the Philippines and the EU in the field of nuclear safety and regulations.

IAEA Hosting on Uranium Potential for Asia-Pacific Region - Continued from Page 8

Representatives from government agencies in the Philippines also attended, such as the Department of Energy, the Department of Environment and Natural Resources - Mines and Geosciences Bureau and the University of the Philippines - National Institute of Geological Sciences (UP-NIGS).

Several IAEA experts on geology, surveys and resources exploration delivered their lectures during the four-day seminar.

These lectures tackled on issues such as geological types of deposits, general resource exploration, uranium exploration methods, ground and airborne surveys, and the uranium potential of Southeast Asia, among others.

Local experts from the PNRI Nuclear Materials Research Section and UP-NIGS also discussed the current setting of resource exploration in the Philippines, as well as some of PNRI's projects for uranium and rare-earth minerals.



Mr. Eduardo Vargas of the PNRI Nuclear Materials Research Section gives an overview of uranium exploration in the Philippines

PNRI Course on Medical Use of Radioisotopes and Course on Radioisotope Techniques



Left Photo: PNRI Director Dr. Alumanda Dela Rosa (seated, right) and PNRI Nuclear Services Division Officer-in-Charge Dr. Preciosa Corazon Pabroa (seated, left) with the topnotchers of the 3rd Course on Medical use of Radioisotopes



Right Photo: Participants of the 3rd Course on Medical Use of Radioisotopes and 2nd Course on Radioisotope Techniques

Professionals from the medical and research sectors completed the third Course on Medical Use of Radioisotopes (CMR) and second Course on Radioisotope Technology (CRT) conducted at DOST-PNRI from September 7 – October 2.

The training course was conducted by the PNRI Nuclear Training Center (NTC) with experts from partner agencies as well as PNRI's own lecturers on nuclear science and technology on the use of radioisotopes in the medical field as well as the equally important aspect of radiation protection, nuclear safety and security.

While the CMR focuses on medical applications of nuclear and radiation technologies, CRT involves a wider and more general grasp of the various nuclear applications in the fields of agriculture, industry, environment protection, healthcare, and research.

Forty-nine (49) doctors and medical technologists from various hospitals throughout the country and a researcher from PNRI graduated from the medical course.

Meanwhile, nine science research specialists, analysts and assistants from PNRI finished the general course.

The training courses were held eight hours daily for four weeks. The first week is spent

on joint classes where the participants were taught basic nuclear physics and radiation chemistry, radiation processing, radiation monitoring instruments, proper handling of radioactive materials and radiation dosimetry.

Starting the following week, the two courses went their separate ways to focus on lectures and activities suited for their specific area, with the medical participants studying cellular radiobiology and cytogenetics, decontamination and radiopharmaceuticals.

The CRT participants joined their CMR counterparts in discussions on nuclear medicine, positron emission tomography

Continued on Page 12

Follow-up Training Course on Reactor Engineering

The DOST-PNRI in cooperation with the Japan Atomic Energy Agency (JAEA) conducted the Follow-up Training Course on Reactor Engineering from October 13-18 at the PNRI Nuclear Training Center.

Fifteen participants from the National Power Corporation, Philippine Normal University, Surigao Del Sur State University and Bagong Silangan High School joined the two-week training course.

The FTC aims to jumpstart the establishment of a reactor engineering training program, which will be a key aspect in the capacity building of personnel for nuclear power in the country.

The training course covers selected topics from the Reactor Engineering Instructor Training Course of the JAEA Nuclear Human Resource Development Center.

Participants joined the lectures and activities on reactor technology, reactor kinetics, reactor safety, heat transfer and nuclear safety & regulations.



Top Photo: The participants visit the Philippine Research Reactor - 1 (PRR-1) at the PNRI Compound

Bottom Photo: Japan Atomic Energy Agency expert Dr. Kiyonobu Yamashita with the course participants at the Secondary Standards Dosimetry Laboratory of PNRI.



Several experiments on radiation measurements and survey, reactor operation simulation and neutron moderation.

The JAEA experts, Dr. Jinichi Nakamura and Dr. Kiyonobu Yamashita, served as the training course's evaluators. Dr. Nakamura presented a lecture on nuclear fuel engineering while Dr. Yamashita discussed on the topic of reactor engineering.

The participants had a guided tour of nuclear facilities in the Philippines, particularly the Bataan Nuclear Power Plant and the Philippine Research Reactor-1 at PNRI.

They also visited other facilities of PNRI, such as the Secondary Standards Dosimetry Laboratory, the Cobalt-60 Multipurpose Irradiation Facility and the Electron Beam Irradiation Facility.

Nuclear Safety, Security and Safeguards

PNRI Ensures Nuclear Security for APEC Summit



Left Photo: Staff from PNRI and the United States Department of Energy - National Nuclear Security Administration (USDOE-NNSA) preparing the monitoring equipment to be used at the Asia-Pacific Economic Cooperation (APEC) Summit on November 18-19



Right Photo: Members of the PNRI Mobile Expert Support Team (MEST) and other agencies conducting security measures on-site

Working hard to ensure the safety of world leaders and other participants from possible nuclear or radiological incidents, the DOST-PNRI helped secure the grounds of the Asia-Pacific Economic Cooperation (APEC) Summit held from November 18-19 at the Philippine International Convention Center in Pasay City.

With the invaluable assistance of the United States Department of Energy - National Nuclear Security Administration and the International Atomic Energy Agency, the PNRI deployed its regulators and radiation detection equipment during the summit to prevent the entry of illicit nuclear or radioactive materials during the two-day summit.

The successful measures were carried out by the PNRI staff in cooperation with the Armed Forces of the Philippines and the Philippine National Police, both of which sent representatives to attend several national workshops on nuclear safety and security at PNRI in the past few months before the APEC Summit.

USDOE Donates Vehicle for Mobile Radiation Detection



PNRI Director Dr. Alumanda Dela Rosa (10th from right) and Ms. Alina Smyslova of the United States Department of Energy (USDOE) with the PNRI Senior Staff and PNRI regulators during the turnover ceremony of the vehicle.

In light of the recently successful Asia-Pacific Economic Cooperation (APEC) Summit this November, the United States Department of Energy (USDOE) has once again donated a vehicle specialized for mobile radiation detection systems to DOST-PNRI on December 14.

The turnover of the specialized vehicle is part of the continued cooperation of USDOE and PNRI in ensuring nuclear safety, security and safeguards. Experts from the USDOE have regularly provided technical assistance to PNRI by providing state-of-the-art equipment and, more importantly, training regulators in radiation detection, nuclear and radiological emergency response, and other measures.



Director Dela Rosa and the PNRI Senior Staff observe the demonstration of the system's equipment after the turnover ceremony of the specialized vehicle

PNRI Hosts AMCHAM and OSAC Meeting



Joining the effort to preserve safety and security among American companies in the Philippines and the tens of thousands of Filipino employees under them, the DOST-PNRI hosted the meeting of the United States' Overseas Security Advisory Council (OSAC) Manila Country Council and the American Chamber of Commerce in the Philippines Security and Disaster Resources Group Committee (AMCHAM Philippines - SDRG).

Representatives from various companies and agencies met with PNRI officials regarding the Institute's capabilities in protecting the public from the dangers of nuclear and radiation-related emergencies in cooperation with other agencies of the government, as well as the potential applications of nuclear science and technology that will benefit the private sector.

PNRI Director Dr. Alumanda Dela Rosa and other PNRI officials highlighted the Institute's technologies for agricultural productivity, quality healthcare and industrial competitiveness, as well as the regulatory and emergency response measures by PNRI as the regulatory body, particularly the development of the National Radiological Emergency Preparedness and Response Plan (RADPLAN).

The OSAC Manila Country Council is associated with the US State Department and the US Embassy's Manila Regional Security Office, promoting security cooperation between the US government and American private-sector interests in the Philippines. Meanwhile, AMCHAM Philippines - SDRG also brings together several American firms in the Philippines to discuss and exchange information on disaster preparation and management.

PNRI Radioisotopes Training Course- Continued from Page 10

and radiation therapy. By the third week, the courses were again taught in a joint class, this time for lectures on the Code of PNRI Regulations, licensing requirements, categorization and security of radiation sources, radio-active waste management and emergency procedures, among other nuclear safety and security measures.

Long quizzes were given every week to test how much the participants have learned. In addition, the participants were also required to present a case study as part of a group to assess procedures or facilities in their respective fields. The case studies were presented on the final day of the training course. Certificates of completion were given to participants who successfully finished the course.

Top Photos: PNRI Director Dr. Alumanda Dela Rosa presents the various activities of PNRI to representatives of various companies and agencies

Bottom Photo: The OSAC and AMCHAM meeting at PNRI

The participants also toured some of the various facilities in PNRI, including the semi-commercial Cobalt-60 Multipurpose Irradiation Facility, the Electron Beam Irradiation Facility, the Technetium-99m Generator Facility and the Philippine Research Reactor – 1 (PRR-1).

Formerly the Radioisotope Techniques Training Course (RTTC) with iterations for medical personnel and general training, the new CMR and CRT courses reflect PNRI's continuing efforts to improve and update the knowledge and skills of professionals engaged in the use of radioisotopes in their respective fields. The first RTTC was held on April 1959, and was one of the first human resources development program in nuclear science and technology in the country.

About Us

The Philippine Nuclear Research Institute (PNRI) is a research and development institute under the Department of Science and Technology (DOST) mandated by law to undertake research and development activities in the peaceful uses of nuclear energy, render nuclear and specialized services and exercise regulatory control in the field of nuclear science and technology. The Institute has been serving the public for the past 55 years, harnessing the beneficial applications of nuclear energy while ensuring the safe use and security of radioactive materials and nuclear facilities for the protection of workers, the general public and the environment.

PNRI Vision

The PNRI is an institution of excellence in nuclear science and technology propelled by a dynamic and committed workforce in the mainstream of national development.

PNRI Mission

We contribute to the improvement of the quality of Filipino life through the highest standards of nuclear research and development, specialized nuclear services, nuclear technology transfer and effective and efficient implementation of nuclear safety practices and regulations.



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